The Herpetofauna of Yellingbo State Faunal Reserve

By Ian Smales*

Introduction

The Yellingbo State Faunal Reserve is situated 48 km due east of Melbourne, in the eastern foothills of the Dandenong Range. The Reserve, one of the State Wildlife Reserve system, is administered by the Fisheries & Wildlife Division, primarily for the conservation of the endangered Helmeted Honeyeater (*Lichenostomus melanops cassidix*). As a result of the Reserve being the major colony site of the Helmeted Honeyeater, and the consequent interest of the Fisheries & Wildlife Division and the Bird Observers' Club, its avifaunal composition is well known. The Reserve supports a varied mammal fauna. This is known to have included the Yellow-bellied Glider (*Petaurus australis*) in the past and indications are that they may persist here, however no comprehensive or recent study of the mammal fauna has been carried out.

The present survey was undertaken with the following objectives:-

- To record the species of reptiles and frogs present within the Reserve.
- To determine, if possible, the microhabitat requirements of the species present and consequently the vegetation associations, or structures necessary to maintain such microhabitats and their dependant herpetofauna.

Since this investigation was begun Hutchinson (1979) has published a survey of the reptiles of Kinglake National Park. It is felt that a comparison of his survey with the present one, in so far as the reptiles are concerned, may be meaningful and so a deliberate attempt has been made to present a format similar to his.

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Methods

Between December 1978 and December 1980 a record was kept of all the reptile and amphibian specimens observed on or adjacent to the Reserve. The initial specimen/s of each species recorded was collected for identification and these specimens have been lodged with the National Museum of Victoria. All specimens taken were collected by hand and no trapping methods were used, except for some unsuccessful attempts to collect *Chelodina longicollis* using drum nets.

The entire survey was carried out incidental to maintenance and management work on the Yellingbo S.F.R. and when such work was being done along the Reserve boundary, the opportunity to check the herpetofauna on land immediately adjacent was taken.

Taxonomy

The amphibian taxonomy follows Brook (1979), while the taxonomy for reptiles is that of Cogger (1979), with two exceptions. Following Coventry's (1976) diagnosis of *Hemiergis* the skink *Saiphos maccoyi* Lucas & Frost is excluded from *Hemiergis* and retained in the genus *Anotis*. However this is simply for the sake of consistency with other recent workers and until its taxonomy is settled, since the name *Anotis* is preoccupied. The skink *Egernia luctuosa* which was formerly thought to consist of two disjunct populations, one in the South West of Western Australia, and the other in Victoria was split by Storr (1978), who erected the name *E. coventryi* for the Victorian species.

The Reserve

The Reserve is basically in the shape of three narrow strips, consisting of land on either side of portions of three

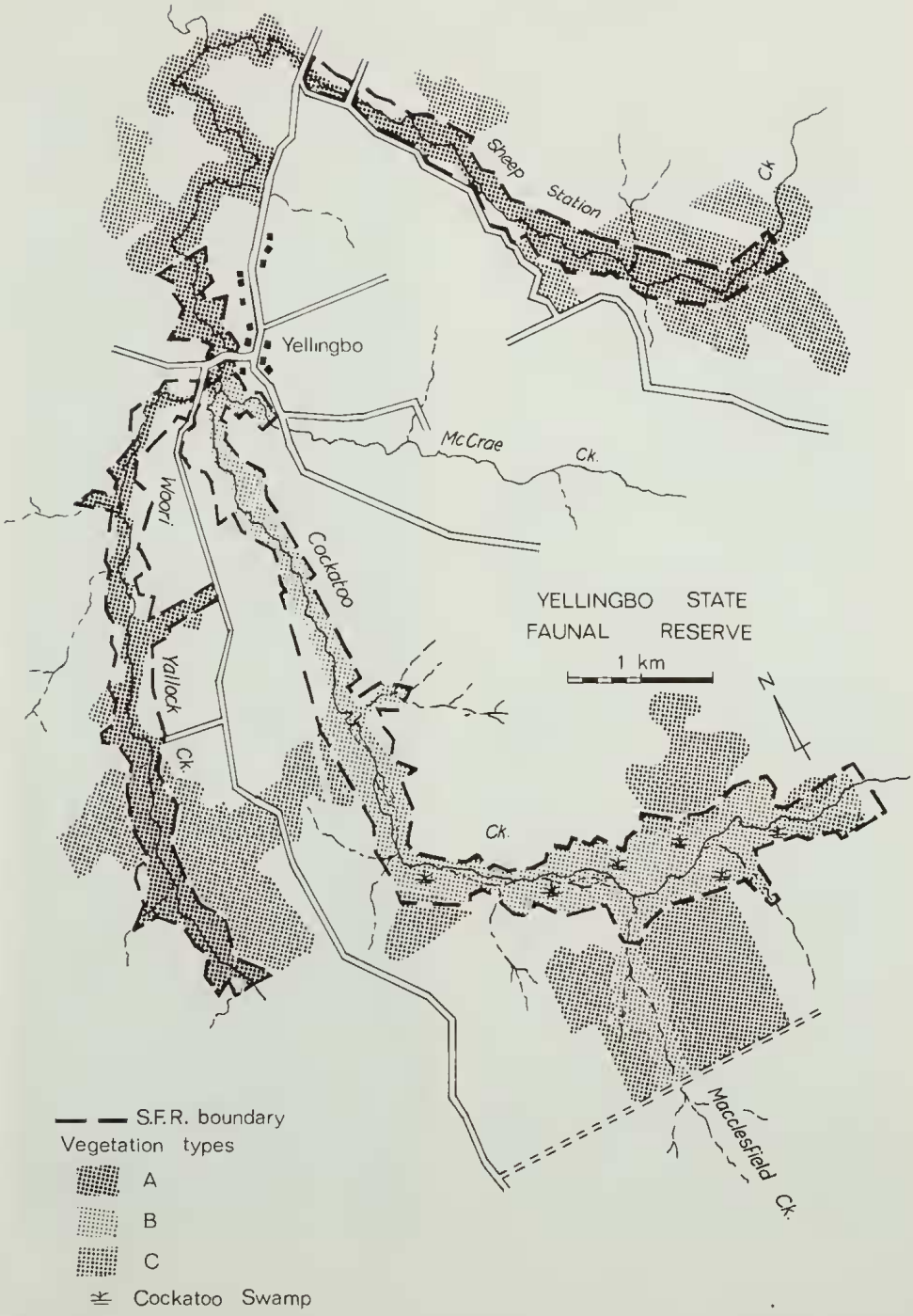

Fig. 1. Yellingbo State Faunal Reserve.

creeks; the Woori Yallock, Cockatoo and Sheepstation. (fig. 1). At the time of the initial creation of the State Faunal Reserve in 1967, the then Fisheries & Wildlife Department assumed management of the standard crown land stream frontage reserve. Since that time the State & Federal governments have carried out a program of land purchase so as to increase the Reserve to its present size of approximately 340 ha.

Throughout their lengths within the Reserve, the Woori Yallock and Cockatoo Creeks each fall from approximately 120m to 90m above sea level. The Sheepstation Creek falls from about 140m to 90m.

The Reserve lies between the 1,200mm and the 1,400mm rainfall isohyet (L.C.C. 1973).

Soil in the area of the Reserve is mottled grey to yellow-brown duplex comprised of silty-clay and fine loam.

Vegetation

An analysis of the vegetation indicates the presence of three natural associations in addition to pasture land recently added to the Reserve. The factors underlying the differences in these vegetational types are primarily contour (i.e. height above creek level) and consequent effect upon water table depth, rather than any major differences in soil composition. As a result the vegetational types tend to merge into one another, however their approximate boundaries are illustrated in fig. 1. In fig. 1 and table 2 the four vegetation groups are listed as A, B, C and D, these are detailed below.

A. (plate 1) **Open-forest type I** (Specht 1970, L.C.C. 1973)

Where the creeks follow a single defined bed the original vegetation complex consists of the Manna gum, *Eucalyptus viminalis*, and Swamp gum, *E. ovata*, in association with Blackwood, *Acacia melanoxylon*, and Silver wattle, *A. dealbata*. In this habitat the lower storey is made up of such species as *Hakea nodosa*, *Bursaria spinosa*, *Cassinia aculeata* and *Coprosma quadrifida*. A few patches of this association still contain the tree-fern species *Cyathea australis* and *Dicksonia antarctica* growing along the creek banks. The ground cover is typically of ferns, including Fishbone water fern, *Blechnum nudum*, Common maidenhair, *Adiantum aethiopicum*, and Austral bracken, *Pteridium esculentum*, with various grasses. In some areas the ground is now dominated by Blackberry, *Rubus procerus*.

B. (plate 2) **Swamp association**

Through much of the southern portion of the Reserve the Cockatoo Ck. flows through wide soaks and braided channels. The widest of such areas is the Cockatoo Swamp at the extreme south

Plate 1 — (A) Open-forest type I, grows along much of Woori Yallock and Sheepstation Creeks. Shown here the trees are Manna gum and Messmate stringybark. Beneath these are Silver wattle, Blackwood, Cassinia and Coprosma.

Plate 2 — (B) Swamp association along Cockatoo Ck. A dense thicket of Swamp gum, Scented paperbark and Prickly ti-tree, with Common reed and various grasses.

eastern end of the Reserve. In these places the vegetation association comprises a dense growth of the paperbarks, *Melaleuca squarrosa* and *M. ericifolia* and ti-trees, *Leptospermum lanigerinum* and *L. juniperinum* with emergent *E. ovata*. The ground in the damper parts supports a cover predominantly of the Common reed, *Phragmites communis*, and *Blechnum nudum*, however slightly less wet areas are dominated by the Red fruit Saw-sedge, *Gahnia sieberana*, with Forest wire grass, *Tetrarrhena juncea*, and Sphagnum moss, *Sphagnum subsecundum*. In some places, such as the centre of the Cockatoo Swamp there are extensive beds of *Phragmites communis* with only occasional emergent trees *(E. ovata, Melaleuca* and *Leptospermum*). Whilst the basis of this community is a *Closed-scrub formation* (Specht 1970), some variety of structural form, due to varying degrees of seasonal waterlogging, is evident.

C. (plate 3) **Open-forest type II** (Specht 1970, L.C.C. 1973)

The slopes above the creeks still support a few uncleared patches of a dry sclerophyll forest. Almost all of this type is on private land outside the Reserve boundary, but was considered where it formed unbroken tracts in conjunction with the Reserve. It is dominated by Messmate stringybark, *E. obliqua*, and Narrow-leafed peppermint, *E. radiata*. Some retains an understorey of *Hakea nodosa*, bracken and occasional Small grass trees, *Xanthorrhoea minor*, however much of this forest has been subject to cattle grazing and has very little regeneration of the understorey except for areas now incorporated into the Reserve, which are beginning to recover.

D. **Alienated land**

Much of the Reserve, particularly portions recently purchased, is cleared and formerly was pasture. Scattered *E. viminalis* and *E. ovata* have remained along the creek frontages. These areas are at present in the process of being replanted with their original flora, and for the purpose of maintaining genetic integrity the Fisheries & Wildlife Division in co-operation with the Society for Growing Australian Plants is doing this using seed gathered from within the Reserve.

Species present

Fourteen species of reptiles, representing the families Elapidae, Scincidae and Chelidae have been recorded. Nine species of frogs representing two families, the Leptodactylidae and Hylidae, are also present (see table I). A summary of the distribution of each taxon according to the available vegetation types is presented in table 2.

The so called 'cold blooded' creatures (ectotherms) possess no internal mechanism for the control of their body

temperature and it is governed by the temperature of their immediate environment. Terrestrial reptiles, however, are able to utilize one of two patterns of behaviour to achieve quite a high degree of thermo-regulation. *Heliotherms* bask in the sun to raise their temperature and retire to the shade to lower it. *Thigmotherms* do not bask but seek out areas of preferred temperature within the sheltered or shaded situations in which they live. Of the 13 terrestrial reptiles found at Yellingbo 11 are heliotherms while 2 of the skinks are thigmotherms.

Reptiles

The only species of snake encountered during the survey was the Copperhead, *Austrelaps superbus* (Lowland form of Rawlinson 1969) It was recorded very frequently and in all of the identifiable vegetation types.

Twelve species of lizards, all from the family Scincidae inhabit the Reserve. The most common species is the small

Table 1

REPTILES AND AMPHIBIANS RECORDED FROM YELLINGBO S.F.R.

Showing National Museum of Victoria registered numbers for voucher specimens collected during the survey.

Family: Elapidae	
Austrelaps superbus (Gunther) (Lowland form, Rawlinson). Lowland Copperhead	D55366-7
Family: Scincidae	
Anotis maccoyi (Lucas & Frost). McCoy's Skink	D55341, D55356-7
Egernia coventryi Storr. Swamp Skink	D55365
Egernia saxatilis Cogger. Black Rock Skink	D55351-2
Egernia whitii (Lacepede) White's Skink	D55364
Lampropholis delicata (De Vis). Delicate Skink	D55358-9
Lampropholis guichenoti (Dumeril & Bibron). Common Grass Skink	D55347-8, D55360
Lampropholis mustelina (O'Shaughnessy). Weasel Skink	D55349-50
Leiolopisma entrecasteauxii (Dumeril & Bibron) (Form A. Jenkins & Bartell)	D55344-5
Leiolopisma metallica (O'Shaughnessy). Metallic Skink	D55346-D55355
Leiolopisma trilineata (Gray). Three-lined Skink	D55361-3
Sphenomorphus tympanum (Lonnberg & Andersson) (Cool Temperate Form, Rawlinson). Southern Water Skink	D55342-3, D55354
Tiliqua nigrolutea Gray. Blotched Blue-tongued Lizard	D55353
Family: Chelidae	
Chelodina longicollis (Shaw). Eastern Snake-necked Tortoise	
Family: Hylidae	
Litoria ewingi (Dumeril & Bibron). Brown Tree Frog	D55323, D55329-30 D55332, D55334
Litoria raniformis (Keferstein) Bell Frog	D55310-11
Litoria verreauxi (Dumeril)	D55331, D55335
Family: Leptodactylidae	
Geocrinia victoriana (Boulenger)	D55317, D55321-2
Limnodynastes dumerilli Peters. Eastern Banjo Frog	D55314-6
Limnodynastes peronii (Dumeril & Bibron) Brown Striped Frog	D55328
Limnodynastes tasmaniensis Gunther. (Southern Call Race, Littlejohn). Spotted Grass Frog.	D55336
Pseudophryne semimarmorata Lucas. Southern Toadlet	D55312-3, D55320, D55324-5, D55333
Ranidella signifera (Girard). Common Eastern Froglet	D55318-9, D55327-8

Plate 3 — (C) Open-forest type II grows on slightly higher ground. The trees here are Messmate stringybark and Narrow leafed peppermint with Hakea and Austral bracken below.

Common grass skink, *Lampropholis guichenoti*, which is found in the litter layer of the Open-forest type II, the areas in and adjacent to the Open-forest type I association where the sunlight reaches the ground and also cleared land, provided there is access to shelter sites, in the form of logs, stumps etc. *Lampropholis delicata* is not common in the Reserve, but was recorded on eight occasions, all from slightly open patches in the Open-forest type I. Two species, *Lampropholis mustelina* and *Anotis maccoyi* are thigmothermic and were usually found only under fallen timber, often in quite damp and shaded situations on the floor of the Open-forest

Table 2

THE INCIDENCE OF INDIVIDUAL SPECIES WITHIN THE VEGETATION TYPES PRESENT
(See text for explanation of vegetation types).

Species	Vegetation types A	B	C	D
A. superbus	+	+	+	+
E. coventryi		+		
E. saxatilis	+	+	+	+
E. whitii		+	+	+
L. delicata	+		+	+
L. guichenoti	+	+	+	+
L. mustelina	+			+
A. maccoyi	+		+	+
L. entrecasteauxii				+
L. metallica	+			
L. trilineata			+	+
S. tympanum	+	+	+	+
T. nigrolutea	+		+	+
C. longicollis	(aquatic)			
L. ewingi	+	+	+	+
L. raniformis	+	+	+	+
L. verreauxi	+	+	+	+
L. dumerilli	+	+	+	+
L. peronii				+
L. tasmaniensis				+
G. victoriana	+	+		+
R. signifera	+	+		+
P. semimarmorata	+		+	+

type 1. *A. maccoyi* was occasionally found under logs in cleared land and on two occasions animals were discovered moving over the substrate well away from any shelter, both on sunny afternoons in June 1980.

Specimens of the Metallic skink, *Leiolopisma metallica* were found infrequently. These were all in refugia in cleared, or partially cleared land immediately adjacent to the Open-forest type 1. One of these specimens was found in winter under a piece of wood together with four specimens of *L. guichenoti*, one *L. mustelina* and one *Litoria verreauxi*, all in a torpid condition. *Leiolopisma trilineata* was also rather uncommon and most often was encountered in areas once cleared but now supporting a young regrowth of *Hakea nodosa*, *Leptospermum lanigerinum*, *E. obliqua* and *Gahnia seiberana*. Two specimens of *Leiolopisma entrecasteauxii* (Form A, Jenkins and Bartell 1980) were found on an old fence post standing in cleared pasture land, in July, 1979, to date no further animals have been located.

Three species of skinks of the genus *Egernia* and one of *Sphenomorphus* were found. These four skinks are similar in their moderate size.

The Cockatoo Swamp is of particular interest because these four species occur there in very close proximity. Around the southern margin of the swamp in the vicinity of Macclesfield Ck., *Egernia whitii* was seen basking in the entrances to burrows, probably constructed by yabbies *(Cherax sp.)*. The vegetation here is either a regrowth, similar to that in which *L. trilineata* was found, or the interface between Open-forest type 11 and the swamp association flora.

The most significant finding of the survey was that of a colony of the Swamp skink, *Egernia coventryi* (plate 4). For many years this skink (known as *Egernia luctuosa)* was rarely recorded in Victoria. Whilst its preference for swamp/heathland was known all along, it was believed to be nocturnal and thus possibly thigmothermic. Rawlinson (1971 a, b) listed it amongst the heliotherms and Robertson (1980) has now improved our understanding of the animal and proven that it is a diurnal heliotherm. Despite this, and some recent additional distributional data, at present it is still only known from about twenty localities (Robertson 1980, Storr 1978).

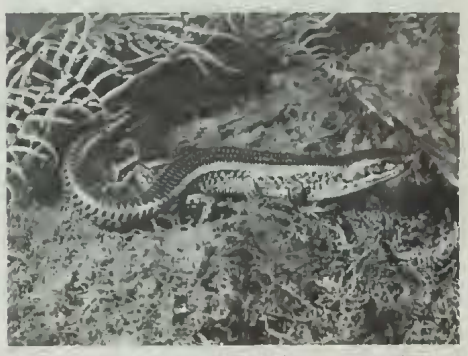

Plate 4 — *Egernia coventryi*, the Swamp Skink.

E. coventryi has been found at the extremities of Cockatoo Swamp and seems to inhabit its entire area, however the colony is particularly dense in an area along the north of the swamp. The vegetation in this specific area consists of the dominant tree species *Melaleuca squarrosa*, with some *E. ovata*. The Eucalypts here, however, have been severely infested with lerp insects (Homoptera, Psyllidae) in the past and consequently there is a great deal of fallen timber on the ground. The ground is covered with Sphagnum moss, *Sphagnum subsecundum* and there are many clumps of the Red fruit saw-sedge, *Gahnia sieberana*. Forest wire grass, *Tetrarrhena juncea* grows into tangles up to 1.5m high around the trunks of the trees. These grass masses, especially where they also contain a dead log or two, are the prime micro-habitat which the lizards use as basking sites and secondary shelter sites. *E. coventryi* is known to use burrows of its own con-

struction, as well as those made by other creatures (e.g. yabbie holes). The vicinity where these observations were made is riddled with small holes and the skinks use these as their prime refuge sites.

The abundance of dead timber around the northern perimeter of Cockatoo Swamp provides habitat for very dense populations of the Black Rock skink, *Egernia saxatilis intermedia*; and the Water skink, *Sphenomorphus tympanum* (Cool temperate form of Rawlinson 1969). *S. tympanum* occurs throughout the Reserve provided that solar radiation reaches the logs on which it basks. *E. saxatilis* does not have access to rocky outcrops here, rather it utilizes dry and cracked timber whether fallen or still standing, wherever such is found, and the killing of trees by lerp infestation appears to have been of direct advantage to this species.

The last four mentioned species present an interesting situation at Cockatoo Swamp. In the area of the confluence of Macclesfield Ck. with the swamp *E. whitii* and *E. coventryi* have been found within a few metres of each other and both species use yabbie burrows, it is not known what interactions occur between the two species. On the north side of the swamp *E. coventryi* is sympatric with *E. saxatilis* and *S. tympanum* and on one occasion in October 1979 specimens of all three were observed basking within two metres of each other on the same log. Again it is hard to know what sort of interspecific interactions are taking place between these animals. However *E. coventryi* does not compete with the other two species for shelter sites, using its terrestrial burrows, while they prefer splits and hollows in the timber.

In summer *Tiliqua nigrolutea,* the Blotched Bluetongue was observed throughout the Reserve in all of the vegetation types. On two occasions specimens were found in hollow logs during the winter.

The three creeks are part of the Yarra system in which only one tortoise species is known to occur, the Eastern Snake-necked tortoise, *Chelodina longicollis.* Attempts to collect specimens by the use of drum nets have not, to date, been successful. One female animal was found close to the Fisheries and Wildlife Division's office in early December, 1979, at least 300m from the nearest permanent water, and it is probable that it had just nested. This tortoise was found by Mr L. Willoughby, the Ranger-Naturalist at Yellingbo, he also reported sighting four further animals in a drying bow of the Woori Yallock Ck. in January 1980.

Goode (1966) states "While freshwater tortoises nest naturally and incubate under normal outside conditions in the River Murray area of Northern Victoria, and in Gippsland, the mean ground temperatures in the Melbourne area are too cold to permit natural incubation of freshwater tortoise eggs." Since the publication of that account this author has examined fertile eggs laid by *C. longicollis* on the banks of the Yarra and there is no doubt that a viable population exists throughout the Yarra drainage. Unfortunately, as a result of the Melbourne pet trade and its consequent introduction of many animals into the Yarra system, it cannot now be established whether or not a natural population existed prior to these introductions, and if so, whether the original stock of *C. longicollis* in this system was genetically closer to the Gippsland or the Murray/Darling drainage population.

Amphibians

The family Hylidae is represented at Yellingbo by three species presently included in the genus *Litoria.* The ubiquitous Brown tree frog, *Litoria ewingi* was found throughout the whole Reserve. *Litoria verreauxi* and the larger *Litoria raniformis* also inhabit all of the habitat types, although *L. verreauxi* was less frequently seen in the Open-forest type II. In summer adults of *L. ranifor-*

inis were observed basking on twigs and emergent plants above the water of slow moving parts of the creeks.

Six further species of frogs, members of four genera, are all from the family Leptodactylidae. *Limnodynastes dumerilli* was encountered throughout the entirety of the Reserve, frequently well away from open water in the forest litter layer. *L. tasmaniensis* (Southern call race of Littlejohn 1966) and *L. peroni* were under logs and flood debris in open pasture, but were not found in any forest situations. During both years *Geocrinia victoriana*, along with *Ranidella signifera* were very common everywhere, except the drier parts of the Open-forest type II forested slopes. *G. victoriana* particularly was evident during March and April when the males were calling. *Pseudophryne semimarmorata* was observed in all the areas of forest, including the Open-forest type II, as well as in former pasture adjacent to forest. It was never found anywhere but under logs, often together with *A. maccoyi*.

Species Not Detected During Survey

A number of species which may be present within, or adjacent to, the Reserve did not turn up during the course of the survey.

On the basis of the literature (Brook, 1975, 1979) all of the species of amphibians likely to occur here were demonstrated to actually exist at Yellingbo. A number of reptiles whose general distributions include Yellingbo were not found due to deficiency of suitable habitat, or for other reasons. These are summarised in table 3 as species which are unlikely to be found at Yellingbo. Some other species may yet occur here and perhaps were overlooked by this survey, they are listed in table 3 as those which possibly may be found in the future.

Of these two groups, some are worthy of mention. The Tiger snake, *Notechis scutatus* is known from many locations within the Yarra catchment, however there are some places where it is rarely, if ever, recorded (P. Brown, C. Logan pers. comm). Despite apparently excellent habitat, the large number of sightings of *A. superbus* make it seem probable that if any other large elapids were present they would have been en-

Table 3

SPECIES NOT DETECTED BY SURVEY

Elapidae		
Cryptophis nigrescens	Small-eyed Snake	+
Drysdalia coronoides	White-lipped Snake	+
Notechis scutatus	Mainland Tiger Snake	-
Pseudechis porphyriacus	Red-bellied Black Snake	-
Pseudonaja textilis	Eastern Brown Snake	-
Unechis flagellum	Little Whip Snake	-
Agamidae		
Amphibolurus muricatus	Jacky Lizard	+
Scincidae		
Leiolopisma coventryi	Brown Forest Skink	+
Lerista bougainvillii		-
Pseudemoia spenceri	Spencer's Skink	+
Tiliqua scincoides	Common Bluetongued Lizard	-
Varanidae		
Varanus varius	Lace Monitor	+

\+ Species possibly occurring at Yellingbo
\- Species unlikely to occur at Yellingbo

countered. Therefore it is doubtful that *N. scutatus* is present at Yellingbo. People local to the area speak of 'black snakes', however no confirmed literature or museum records of the Red-bellied Black Snake, *Pseudechis porphyriacus*, are known for the area south of the Great Divide between Bacchus Marsh in the west and near Maffra in the east. Rawlinson (1971 a,b) has indicated this warm temperate distribution. All of the adult specimens of *A. superbus* examined were very dark slatey-black with orange colouration of the ventro-lateral region and their superficial similarity to *P. porphyriacus* would explain confusion between the two. These factors indicate that *P. porphyriacus* is not present at Yellingbo and that, for the present, verbal reports may best be regarded as referring to *A. superbus*.

The skinks *Pseudemoia spenceri* and *Leiolopisma coventryi*, inhabitants of separate microhabitats within wet sclerophyll forest, may be living in climax Open-forest type I at the south-eastern end of Sheepstation Ck., but they were not detected.

The Lace Monitor, *Varanus varius* is well known within a few kilometres both to the north and south of the Reserve. If it is present here it is probably only in places where Open-forest type II on private land is contiguous with the bush on the Reserve itself and provides sufficient area for the requirements of this large animal.

Zoogeography

On the basis of Rawlinson's (1969) division of the Bassian sub-region into three zones Yellingbo S.F.R. can readily be ascribed to the cool temperate zone. Whilst geographically the Reserve lies very close to the transition between warm temperate and cool temperate zones the reptile composition clearly shows a closer affinity to the cool temperate than either the warm or cold temperate zones. Data in table 4, adapted from Rawlinson (1971 a), demonstrates the above conclusion and also the greater influence of the warm temperate fauna in this area than that of the cold temperate. Only two species encountered in the survey are not listed by Rawlinson as cool temperate zone rep-

Table 4

ZOOGEOGRAPHIC DISTRIBUTION OF REPTILES RECORDED

	Warm temperate zone	Cool temperate zone	Cold temperate zone
Elapidae			
A. superbus (Lowland form)		+	
Scincidae			
A. maccoyi		+	
E. coventryi	+		
E. saxatilis	+	+	
E. whitii	+	+	+
L. delicata	+	+	
L. guichenoti	+	+	
L. mustelina	+	+	
L. entrecasteauxii		+	+
L. metallica		+	+
L. trilineata	+	+	
S. tympanum (Cool temperate form)		+	+
T. nigrolutea		+	
Chelidae			
C. longicollis	+		

tiles and these are the warm temperate *Egernia coventryi* (listed as *E. luctuosa*) and *Chelodina longicollis*. Both of these animals are dependent upon riparian habitat, *C. longicollis* being almost entirely aquatic, and their existence here in the cool temperate may be explained by thcir dependence upon warmer valleys within the zone. Since 1971 *E. coventryi* has been located at a number of other sites within the cool temperate zone (e.g. French Is., Wilson's Promontory, Noojee — P. Robertson 1980) and perhaps in the light of this further knowledge, its inclusion only in the warm temperate zone of Rawlinson's scheme may warrant review.

The amphibians of the Reserve are shown in table 5 according to the zoogeographic regions to which Littlejohn (1971) assigned them. The bias is clearly toward the Southern Bassian fauna, containing five species listed as exclusive to that zone and three species listed as 'wide-ranging' (i.e. encompassing both Bassian zones within their distributions). Only *Litoria verreauxi* is shown as primarily Eastern Bassian in distribution, however the data of Brook (1979) shows that this species extends from this zone somewhat to the west of Port Phillip Bay.

Conservation Value Of The Reserve

The significance of the Reserve from a herpetological point of view can bc assessed from two angles, (1) the taxonomic diversity which it supports and (2) its value to individual species.

(1) *Taxonomic diversity*

The number of species present is good when the small size of the Reserve is considered. It undoubtedly reflects the variety of habitats available. Hutchinson (1979), who surveyed the reptiles of Kinglake National Park, 35km to the north-east of Yellingbo, found 19 species in an area of 5,800 ha, which encompassed 5 identifiable natural vegetation associations. At Yellingbo 14 reptiles were encountered in an area of only 340 ha, 5.86% of the area at Kinglake, and including 3 natural vegetation associations as well as alienated land. Of the species which occur at Yellingbo 10 (71.4% of the total) also occur at Kinglake.

Prior to the commencement of the survey a checklist of 9 frogs most likely

Table 5

ZOOGEOGRAPHIC DISTRIBUTION OF AMPHIBIANS RECORDED

	Southern Bassian	Eastern Bassian	Wide-ranging
Hylidae			
L. ewingi	+		
L. raniformis			+
L. verreauxi		+	
Leptodactylidae			
L. dumerilli	+		
G. victoriana	+		
L. peronii			+
L. tasmaniensis (Southern call race)	+		
P. semimarmorata	+		
R. signifera			+

(Tables 4 and 5 — Data adapted from Littlejohn and Rawlinson (1971). See text for explanation of nomenclature.)

to be collected at Yellingbo was drawn up from the literature (Brook 1975, 1979, Littlejohn 1963, 1971, Barker and Grigg 1977). As can be expected from the riparian nature of the Reserve, frogs abound and in fact the full complement of expected species was discovered.

On the basis of this analysis it may be said that despite its small total area and narrowness, the Reserve is maintaining a good herpetofaunal variety.

(2) *Significance to individual species*

The Reserve may only be considered of particular conservation value to *Egernia coventryi*. All of the other species discussed here are quite widespread and at present are in no way endangered. The colony of *E. coventryi* may well be one of the largest in existence. It appears to take in the whole of Cockatoo Swamp (approx. 50ha) and this is presently under investigation. Of the other known collection sites for this lizard two are within National Parks, at Mallacoota and Wilson's Promontory and one is within French Is. State Park. Many of the other locations are on private land and hence provide no guaranteed habitat protection. With the exception of the Yellingbo and Boneo colonies, at none of the sites have more than half a dozen specimens been observed or collected and some of them are represented by single animals only. More colonies may be found in the future, however their swamp land habitat has been extensively cleared and drained throughout much of Victoria. The Yellingbo S.F.R. is therefore considered to be of significant value in the conservation of this most attractive skink.

Reserves, Shapes And Sizes

From the foregoing results some generalised comments can be made in relation to the size and shape of a reserve such as Yellingbo. Yellingbo State Faunal Reserve is a riparian habitat and its prime purpose is the conservation of a riparian species, the Helmeted Honeyeater, this fact, together with the history of settlement of the surrounding district has necessitated it being in the shape of thin strips of land.

A number of authors have commented that long, narrow strips of land are not ideal for nature reserves. (Diamond and May 1976, Winter 1978, Frankenberg 1971 and Hastings 1977, the last 2 authors specifically mentioning Yellingbo). This is due to the considerable effects upon such a reserve of management practices carried out upon land outside and abutting the reserve boundary. Also dispersal distances of fauna within the reserve are seriously confined.

Whilst the herpetofaunal variety is good, for animals of small body size at least, some correlation between the number of species present and the width of the Reserve at a given point seemed to be manifest. Certainly the vicinity of Cockatoo Swamp, the widest part of the Reserve and an area where much of the surrounding freehold, at present supports bush contiguous with the Reserve (Fig.1), has more species than were observed in other comparable but narrower areas. No quantitative assessment of this was made but two of the larger skink species, *E. coventryi* and *E. whitii* were not found outside this area. Studies by Stebbins and Barwick (1968) demonstrated the large distances and area which may be covered in the daily activity of an adult Lace Monitor, almost without doubt, if this species does occur within the Reserve it will only be in a place or places where the adjoining freehold is naturally timbered and will thus provide sufficient space for such an animal.

It may be argued that a greater number of species present in a wider area of reserve, like the Cockatoo Swamp, may simply reflect the greater variety of microhabitats available, but perhaps therein lies its value.

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